IN THE CLAIMS

1. (currently amended) A fiber rendering apparatus comprising:

a device for specifying a region of interest or volumetric region of interest in three-dimensional image data collected by a diffusion tensor method in an MRI apparatus;

a device for defining regular grid points in the region of interest or volumetric region of interest;

a device for defining points obtained by randomly moving the grid points based on a distribution function in a two-dimensional or three-dimensional manner as tracking start points;

a device for performing diffusion tensor analysis on each tracking start point in the three-dimensional image data to determine a direction of a principal axis vector;

a device for tracking a fiber by repeatedly selecting a neighbor point along the direction of the principal axis vector and performing diffusion tensor analysis on the neighbor point to determine a direction of a principal axis vector; and

a device for producing and displaying an image of the tracked fibers as viewed in a desired view direction.

2. (currently amended) A fiber rendering apparatus comprising:

a device for defining tracking start points in three-dimensional image data collected by a diffusion tensor method in an MRI apparatus, wherein the tracking start points are generated by randomly displacing a plurality of grid points located in a region of interest based on a distribution function;

a device for performing diffusion tensor analysis on each tracking start point in the three-dimensional image data to determine a direction of a principal axis vector and a diffusion anisotropy value;

a device for tracking a fiber by repeatedly selecting a neighbor point along the direction of the principal axis vector and performing diffusion tensor analysis on the neighbor point to determine a direction of a principal axis vector and a diffusion anisotropy value; and

a device for producing an image of the tracked fibers as viewed in a desired view direction and displaying the image with opacity reflecting the diffusion anisotropy values at the tracking start points and neighbor points.

3. (original) The fiber rendering apparatus of claim 2, wherein an FA value is used as the diffusion anisotropy value.

4. (previously presented) The fiber rendering apparatus of claim 3, wherein

$X_{n+1}=FA_nX_n$,

where X_{n+1} represents an opacity at a neighbor point, FA_n represents an FA value at the immediately preceding neighbor point or tracking start point, and X_n represents an opacity thereat.

5. (currently amended) A fiber rendering apparatus comprising:

a device for defining tracking start points in three-dimensional image data collected by a diffusion tensor method in an MRI apparatus, wherein the tracking start points are generated by randomly displacing a plurality of grid points located in a region of interest based on a distribution function;

a device for performing diffusion tensor analysis on each tracking start point in the three-dimensional image data to determine a direction of a principal axis vector and eigenvalues of a diffusion tensor;

a device for tracking a fiber by repeatedly selecting a neighbor point along the direction of the principal axis vector and performing diffusion tensor analysis on the neighbor point to determine a direction of a principal axis vector and eigenvalues of a diffusion tensor; and

a device for producing an image of the tracked fibers as viewed in a desired view direction and displaying the image with display colors reflecting the eigenvalues of the diffusion tensors at the tracking start points and neighbor points.

6. (original) The fiber rendering apparatus of claim 5, wherein a display color (R, G, B) is defined as:

R:G:B=1:λ2/ λ1:λ3/ λ1, where λ1, λ2 and λ3 represent eigenvalues of a diffusion tensor.

7 (new) The fiber rendering apparatus of Claim 1, wherein the image is displayed with display colors based on the tracking start points and neighbor points.

8 (new) The fiber rendering apparatus of Claim 1, wherein the image is displayed with opacity reflecting based on the tracking start points and neighbor points.

9. (new) The fiber rendering apparatus of Claim 1, wherein the tracked fibers are white brain matter fibers.

10. (new) The fiber rendering apparatus of Claim 1, wherein the grid points are randomly moved within a range such that, after moving, the points fall within intervals between the original locations of the grid points.

11. (new) The fiber rendering apparatus of Claim 1, wherein the grid points are moved based at least one of a Gaussian function and a uniform function.

12. (new) The fiber rendering apparatus of Claim 1, wherein the device for tracking a fiber is capable of tracking the fiber when a fiber density decreases in a three-dimensional volume.

13. (new) The fiber rendering apparatus of claim 2, wherein the tracked fibers are white brain matter fibers.

14. (new) The fiber rendering apparatus of claim 2, wherein the grid points are randomly moved within a range such that, after moving, the points fall within intervals between the original locations of the grid points.

15. (new) The fiber rendering apparatus of claim 2, wherein the grid points are moved based at least one of a Gaussian function and a uniform function.

16. (new) The fiber rendering apparatus of claim 2, wherein the device for tracking a fiber is capable of tracking the fiber when a fiber density decreases in a three-dimensional volume.

17. (new) The fiber rendering apparatus of claim 5, wherein the tracked fibers are white brain matter fibers.

18. (new) The fiber rendering apparatus of claim 5, wherein the grid points are randomly moved within a range such that, after moving, the points fall within intervals between the original locations of the grid points.

19. (new) The fiber rendering apparatus of claim 5, wherein the grid points are moved based at least one of a Gaussian function and a uniform function.

20. (new) The fiber rendering apparatus of claim 5, wherein the device for tracking a fiber is capable of tracking the fiber when a fiber density decreases in a three-dimensional volume.